

Arable plants: land management resource pack

Lecturer notes

Aims of arable plant education resources:

- To raise awareness of arable plants among future land managers.
- To engage future land managers in arable plant conservation and management.
- To develop practical field skills in arable plant identification and survey.

Level and indicative subjects:

Adaptable for Further and Higher Education.

Agriculture; environment; ecology; biology; conservation; geography; countryside.

Managing land for arable plants pack structure:



Do I need access to a farm?

This resource pack provides real farm maps and data so you do not need access to a farm. Alternatively, if you do have access to a farm and its records, you could adapt the resources to include your own data. It could also be adapted to cover other types of disturbed land, such as urban wasteland.

How much time is needed?

This depends how much depth you wish students to learn. The resources could form a full day workshop, or just a few slides or activities to include in your existing teaching.

When should these activities be done?

The resource is a classroom-based activity and can be completed at any time of year.

Agri-environment schemes are changing – will I still be able to use the resources?

The presentation is designed to be neutral – key principles are covered. The decision-making activity is necessarily specific to current schemes and prices but can be easily updated.

Who provides the risk assessment?

Risk assessment is the responsibility of the staff leading the activity. As the risk assessment is specific to your institution, site and students, it is not provided as part of the pack. The resource is classroom-based but would be enhanced by a farm walk.

Suggested session plan:

Activity	Lecturer	Student
Introductory presentation	Present the topics with discussion and Q&A encouraged throughout.	Contribute to discussion, takes notes.
<p>How can the presentation be adapted?</p> <ul style="list-style-type: none"> • Can be used in conjunction with the 'Arable Plants: conservation and ecology' presentation. • Adapt or cut slides to suit students' prior knowledge of conservation and/ or agriculture. • Ask students to complete pre-reading from the reference list. • Create opportunities for discussion based around local agricultural practices and soil types. 		
<p>Group work decision-making activity</p> <p>Management (Activity 4)</p>	<p>Organise student groups of 3-5.</p> <p>Explain the activity: students work in groups to select agri-environment options, annotate the map to show recommended locations, and justify choices.</p> <p>Set objectives for each group or allow them to determine their own objectives.</p>	<p>Work in groups of 3-5 to research and select agri-environment options to meet production and arable plant conservation objectives.</p> <p>Annotate map to show recommended locations for suitable agri-environment options.</p>
<p>How can the group work activity be adapted?</p> <ul style="list-style-type: none"> • Substitute data from local farm if available. • Create mixed groups from different courses (e.g. agriculture and conservation) to inform decisions. • Depending on students' prior knowledge, set between 1-3 objectives, or allow them to choose their own. These could be simple e.g. 'At least 3% of the farm area must be under options suitable for arable plants', or more complex e.g. 'Devise a costed farm management plan for arable plant conservation through conversion to organic over a 5 year period'. • Go beyond arable plants to consider farmland birds and mammals, or game bird management. • Consider balance of biodiversity/ environmental outcomes e.g. carbon capture, multi-tiered margins. • Consider wider costs, machinery availability, and neighbouring land use/ farming practices. • There is no 'right' quantitative answer. Qualitative factors such as farmer preference or visual appeal of plants can be taken into account. 		
<p>Virtual activity</p> <p>Cultivation (Activity 5)</p>	<p>Download the two slide packs for autumn and spring germinating surveys (in MP4 format) and activity sheet and distribute to students.</p> <p>Advise during practical.</p>	<p>Work alone or in small groups to identify the species present in each quadrat.</p> <p>Discuss the type of vegetation community that germinates under different seasonal cultivation and management that would benefit arable plants.</p>
<p>How can the group work activity be adapted?</p> <ul style="list-style-type: none"> • Ask the students to discuss what beneficial management could be applied for arable plants using the best practice management guidance available online. • Compare the arable plant communities across the three main types of soil – calcareous derived limestone and chalk soils, clays and slowly permeable soils and sandy / shale free-draining soils. • The focus of this activity is to generate discussion and some of the questions that the students could answer include: <ul style="list-style-type: none"> ○ Could different management be applied? ○ How could depth of cultivation affect arable plants? 		

<ul style="list-style-type: none"> ○ How could injurious and problem weeds be managed alongside rare and threatened arable plants? • The plants present in each quadrat are provided overleaf. 		
Student Presentation	Ask students to display and justify their annotated maps.	Present final annotated map and justify choices of options and location.
<p>How can the presentation be adapted?</p> <ul style="list-style-type: none"> • Set as a group presentation assessment or a written justification could be individually assessed. • Maximise reference to literature to justify decisions made. • Use GIS maps and datasets if you have them available for local farm. • Devise an arable plant monitoring plan to determine success of proposed management. 		

National Vegetation Survey Recording Form for Arable Plants Under Different Cultivations

Arable plants in spring sown crops

Species	1	2	3	4	5	6	7	8	9	10	11	12
Fat Hen (<i>Chenopodium album</i>)	P	P	P	P	P	P			P		P	P
Field Bindweed (<i>Convolvulus arvensis</i>)	P			P		P			P			
Sunspurge (<i>Euphorbia helioscopia</i>)							P				P	P
Black Bindweed (<i>Fallopia convolvulus</i>)								P				
Common Fumitory (<i>Fumaria officinalis</i>)	P	P		P		P	P	P	P	P	P	P
Crane's-bill (<i>Geranium</i> sp.)		P				P			P			
Henbit Dead-nettle (<i>Lamium amplexicaule</i>)	P						P	P		P		
Red Dead-nettle (<i>Lamium purpureum</i>)	P	P	P	P	P	P	P	P	P	P	P	P
Venus's-looking-glass (<i>Legousia hybrida</i>)	P		P			P	P	P	P	P	P	
Scarlet Pimpernel (<i>Lysimachia arvensis</i>)	P	P	P				P	P	P	P		P
Black Medick (<i>Medicago lupulina</i>)	P		P		P		P	P	P			
Common Poppy (<i>Papaver rhoeas</i>)			P	P	P	P	P	P	P	P		P
Broadleaved Dock (<i>Rumex obtusifolius</i>)	P				P							
Field Madder (<i>Sherardia arvensis</i>)	P	P					P	P	P		P	
White Campion (<i>Silene latifolia</i>)								P				
Charlock (<i>Sinapis arvensis</i>)			P	P								
Prickly Sowthistle (<i>Sonchus asper</i>)	P	P			P							P
Smooth Sowthistle (<i>Sonchus oleraceus</i>)				P			P					
Common Chickweed (<i>Stellaria media</i>)				P							P	P
Dandelion (<i>Taraxacum officinale</i>)						P						
Field Pennycress (<i>Thlaspi arvense</i>)	P	P	P	P	P		P		P	P		P
Common Field-speedwell (<i>Veronica persica</i>)	P		P		P	P		P	P	P	P	P
Field Pansy (<i>Viola arvensis</i>)	P		P		P	P		P	P			

Arable plants in winter sown crops

Species	1	2	3	4	5	6	7	8	9	10	11	12
Fool's Parsley (<i>Aethusa cynapium</i>)			P							P		
Parsley-piert (<i>Aphanes arvensis</i>)			P				P	P	P			P
Thyme-leaved sandwort (<i>Arenaria serpyllifolia</i>)	P											
Wild oat (<i>Avena fatua</i>)		P		P				P				
Field Bindweed (<i>Convolvulus arvensis</i>)			P	P		P		P	P	P	P	
Sunspurge (<i>Euphorbia helioscopia</i>)		P										
Cut-leaved geranium (<i>Geranium dissectum</i>)	P			P								
Red Dead-nettle (<i>Lamium purpureum</i>)	P											
Scarlet Pimpernel (<i>Lysimachia arvensis</i>)				P							P	
Black Medick (<i>Medicago lupulina</i>)	P	P	P		P		P		P		P	
Field forget-me-not (<i>Myosotis arvensis</i>)			P		P	P	P	P		P	P	P
Red bartsia (<i>Odontites vernus</i>)	P	P	P		P	P	P	P	P	P	P	P
Common Poppy (<i>Papaver rhoeas</i>)	P	P	P	P	P	P	P	P	P	P		P
Broadleaved Dock (<i>Rumex obtusifolius</i>)				P								
Field Madder (<i>Sherardia arvensis</i>)	P	P	P		P	P	P	P	P	P	P	
Charlock (<i>Sinapis arvensis</i>)				P								
Smooth Sowthistle (<i>Sonchus oleraceus</i>)									P			
Common Chickweed (<i>Stellaria media</i>)										P		
Field Pennycress (<i>Thlaspi arvense</i>)				P							P	
Knotted hedge-parsley (<i>Torilis nodosa</i>)		P	P		P	P	P	P	P		P	P
White clover (<i>Trifolium repens</i>)	P						P	P	P	P		P
Scentless mayweed (<i>Tripleurospermum inodorum</i>)	P	P									P	
Common Field-speedwell (<i>Veronica persica</i>)			P									
Field Pansy (<i>Viola arvensis</i>)	P	P			P	P		P		P	P	P